

# TRANSFER DRUM OF BELT-SHAPED RUBBER MATERIAL

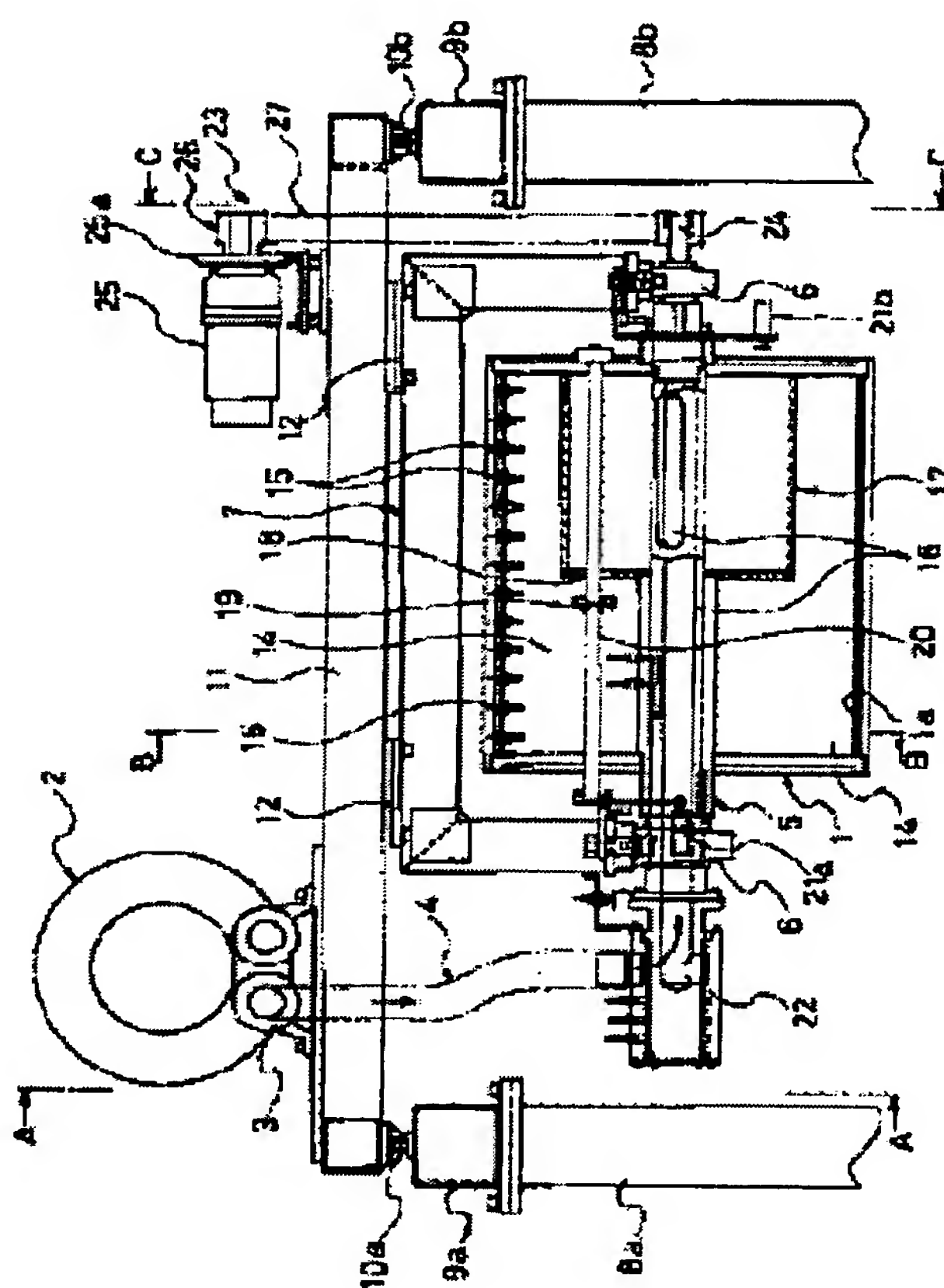
**Publication number:** JP2001315219  
**Publication date:** 2001-11-13  
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**Classification:**  
 - international: **B29D30/30; B29D30/30; (IPC1-7): B29D30/30**  
 - european:  
**Application number:** JP20000139344 20000512  
**Priority number(s):** JP20000139344 20000512

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## Abstract of JP2001315219

**PROBLEM TO BE SOLVED:** To provide a transfer drum of a belt-shaped rubber material which can effectively prevent defective suction in relation to the change in the width direction of a material and defective supply to a tire molding drum and improve the reliability of suction by a drum main body.

**SOLUTION:** A cylindrical pressure chamber 17 communicating with a suction passage 16 formed in the longitudinal direction in a rotary support shaft 5 is formed in a part of the periphery of the shaft 5 in the drum main body, and communication holes 18 communicating with each divided hollow chamber 14 are formed in the side wall surface of the pressure chamber 17. Change-over valves 19 which open/close the holes 18 are attached to the holes 18. The valves 19 are closed usually and, when the rubber material which is not given in Fig is sucked/held, opened by an opening/closing cylinder 21b through a rod 20, and the accumulated suction force of the pressure chamber 17 is applied to each hollow chamber 14.



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## **TRANSFER DRUM OF BELT-SHAPED RUBBER MATERIAL**

### **[Claim(s)]**

[Claim 1] By Hazama of the peripheral face of a rotation support shaft and the wall of the body of a drum which were inserted in the interior of the body of a drum formed in the bell shape in the core While carrying out partition formation of two or more hollow rooms through a bridgewall in a hoop direction, on the front face of the body of a drum The imprint drum of the band-like rubber ingredient which forms said hollow room and two or more adsorption holes open for free passage, forms the suction path linked to a suction means in the interior of said rotation support shaft, connects this suction path and said each divided Naka vacant room in two or more free passage holes equipped with the closing motion diverter valve, and changes.

[Claim 2] The rotation support shaft equipped with the suction path linked to a suction means is inserted in the core of the body of a drum formed in the bell shape. While carrying out partition formation of two or more hollow rooms through a bridgewall in a hoop direction between the wall of said body of a drum, and the peripheral face of said rotation support shaft Said hollow room and two or more adsorption holes open for free passage are formed in the front face of the body of a drum. On a part of periphery of the rotation support shaft within said body of a drum The imprint drum of the band-like rubber ingredient which prepares the closing motion diverter valve which opens and closes this free passage hole, and changes while forming said suction path and a tubed pressure room open for free passage and forming the free passage hole which is open for free passage with said each divided Naka vacant room on the wall surface of this pressure room.

[Claim 3] The imprint drum of the band-like rubber ingredient which inserts the rotation support shaft equipped with the suction path linked to a suction means in the core of the body of a drum in which two or more suction nozzles were formed on the front face, connects said two or more suction nozzles and the suction path of a rotation support shaft in two or more suction pipes, prepares a closing motion diverter valve in the connection of a suction path and each suction pipe, and changes.

### **[Detailed Description of the Invention]**

#### **[0001]**

[Field of the Invention] This invention is concerned with the imprint drum of a band-like rubber ingredient, and relates to the imprint drum which improved the gas supply pressure failure over change of the cross direction of a band-like rubber ingredient in more detail.

[0002]

[Description of the Prior Art] Generally, when the number of winding or the carcass material (band-like rubber ingredient) which are involved in is [ two or more ] around a bead in tire shaping, the ingredient of different width is used from failure of the fabricated tire and the standpoint of endurance, so that a level difference may arise at the both ends of each class.

[0003] Therefore, when sticking two or more carcass material as a tire component in piles by tire shaping drum lifting, the stock roll according to individual by which the band-like ingredient was rolled round by predetermined width of face, respectively was supplied to the servicer of a making machine, and was \*\*\*\*(ed) and used for it.

[0004] for this reason, at the process which cuts the band-like rubber ingredient which \*\*\*\*(ed) from the original fabric roll While preparing the ingredient separately sent to degree process, and having a servicer according to each ingredient also in a forming cycle and an installation cost's starting The necessary tooth space needed to be increased and there was a problem which twist with supply of a band-like ingredient, an activity takes time and effort and time amount, and working capacity says is very bad.

[0005] So, in the former, after \*\*\*\*(ing) the band-like rubber ingredient of the same width of face from the original fabric roll and cutting to shaping drum width of face, the conveyance conveyor arranged in the sense which intersects perpendicularly was made to transfer the cutting ingredient, and the equipment conveyed and supplied to a shaping drum side was proposed.

[0006] However, the direction which changes a direction into the sense which intersects perpendicularly the band-like rubber ingredient which carried out standard size cutting, and a conveyance conveyor is made to transfer, and is supplied had the problem which there is a problem in attachment precision etc. and says that working capacity is also bad.

[0007] Then, where a step is prepared one by one, the laminating of the band-like rubber ingredients (a rubber sheet, carcass ingredient, etc.) of two or more sheets by which standard size cutting was carried out further was carried out to the peripheral face of the body of a drum, it twisted, and the body of a drum was moved to the shaping drum side, and the imprint drum which winds the layered product of a band-like rubber ingredient around a shaping drum, and moves it was used.

[0008]

[Problem(s) to be Solved by the Invention] However, by the body of a drum, since it was the method which makes the carcass ingredient of different width stick to a drum front face by adsorption power, such as a vacuum, as mentioned above, the problem was

in dependability to width change of a carcass ingredient.

[0009] Namely, two or more adsorption holes established in the drum front face to which the carcass ingredient of different width is made to stick Since it is formed so that it can adsorb to the whole band-like rubber ingredient width of different width, For example, the band-like rubber ingredient of the 1st layer is made to adsorb in two or more adsorption holes established in the drum front face. Subsequently, when twisting adsorbing the band-like rubber ingredient of a two-layer eye, the band-like rubber ingredient of the 3rd layer, and the ingredient with which width differed and making a band-like rubber ingredient with a narrow width of the 1st layer adsorb in an adsorption hole, the adsorption hole to which it does not stick will inhale atmospheric air.

[0010] Consequently, the adsorption power of the vacuum which inhaled atmospheric air had the problem said that it falls rapidly, a two-layer eye and the ingredient adsorption power of the 3rd layer decline, and the dependability of adsorption of as opposed to [ twist, and sometimes exfoliate, consequently the problem of the gas supply pressure failure to a tire shaping drum etc. arises and ] width change of an ingredient on the body of a drum falls.

[0011] When carrying out the laminating of the band-like rubber ingredient of different width to the body of a drum one by one and twisting it around it, the purpose of this invention can prevent effectively the poor adsorption over cross direction change of an ingredient, and the gas supply pressure failure to a tire shaping drum, and is to offer the imprint drum of the band-like rubber ingredient which can raise the dependability of adsorption by the body of a drum.

[0012]

[Means for Solving the Problem] In order that this invention may attain the above-mentioned purpose, between the peripheral faces of a rotation support shaft and the walls of the body of a drum which were inserted in the interior of the body of a drum formed in the bell shape in the core While carrying out partition formation of two or more hollow rooms through a bridgewall in a hoop direction, on the front face of the body of a drum Said hollow room and two or more adsorption holes open for free passage are formed, and the suction path linked to a suction means is formed in the interior of said rotation support shaft, and let it be a summary to have connected this suction path and said divided each hollow room in two or more free passage holes equipped with the closing motion diverter valve.

[0013] This invention to moreover, the core of the body of a drum formed in the bell shape While inserting in the rotation support shaft equipped with the suction path linked to a suction means and carrying out partition formation of two or more hollow rooms



through a bridgewall in a hoop direction between the wall of said body of a drum, and the peripheral face of said rotation support shaft Said hollow room and two or more adsorption holes open for free passage are formed in the front face of the body of a drum. On a part of periphery of the rotation support shaft within said body of a drum While forming said suction path and a tubed pressure room open for free passage and forming said each divided Naka vacant room and a free passage hole open for free passage in the wall surface of this pressure room, let it be a summary to have prepared the closing motion diverter valve which opens and closes this free passage hole.

[0014] Furthermore, this invention inserts the rotation support shaft equipped with the suction path linked to a suction means in the core of the body of a drum in which two or more suction nozzles were formed on the front face, said two or more suction nozzles and the suction path of a rotation support shaft are connected in two or more suction pipes, and it carries out having prepared the closing motion diverter valve to the connection of a suction path and each suction pipe as a summary.

[0015] The suction force of the band-like rubber ingredient by which this invention is constituted as mentioned above and the front face of the body of a drum is adsorbed the path linked to the adsorption hole and the suction path of a blower motor which used the suction force by the side of suction of a blower motor, and were established in the front face of the body of a drum -- the suction force of an adsorption hole -- an individual exception -- ON and OFF -- by having prepared the controllable closing motion diverter valve The poor adsorption over cross direction change of an ingredient and the gas supply pressure failure to a tire shaping drum can be prevented effectively, and the dependability of adsorption by the body of a drum can be raised.

[0016]

[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is explained based on an accompanying drawing.

[0017] An attachment beam condition the imprint drum which drawing 1 shows the 1st operation gestalt of this invention a part a sectional view, the B-B view sectional view the A-A view side elevation of drawing 1 and whose drawing 3 of drawing 2 are drawing 1 , and drawing 4 The C-C view side elevation of drawing 1 is shown, and the rotation support shaft 5 connected to the suction opening 3 of the blower motor 2 which constitutes a suction means to mention later through the suction pipe 4 is inserted in the core of the body 1 of a drum formed in the bell shape of said imprint drum.

[0018] Said rotation support shaft 5 is supported by the gate type frame 7 pivotable through the bearing material 6, and the gate type frame 7 is hung by the movable track frame 11 through the holddown member 12 along with the guide rails 10a and 10b laid

by the frames 9a and 9b on support shaft 8a and 8b.

[0019] Between wall 1a of said body 1 of a drum, and the peripheral face of said rotation support shaft 5, as shown in drawing 3 , partition formation of two or more hollow rooms 14 is carried out through the bridgewall 13 of two or more sheets in a hoop direction, and said each Naka vacant room 14 and two or more adsorption holes 15 open for free passage are formed in the front face of the body 1 of a drum.

[0020] The suction path 16 formed in the interior of the rotation support shaft 5 along with the longitudinal direction and the tubed pressure room 17 open for free passage are formed in a part of periphery of the rotation support shaft 5 within said body 1 of a drum, and said each divided Naka vacant room 14 and two or more free passage holes 18 open for free passage are formed in the side-attachment-wall side of this pressure room 17. The closing motion diverter valve 19 which opens and closes this free passage hole 18 is formed in two or more of these free passage holes 18, and in case the closing motion diverter valve 19 is always closed and adsorption maintenance of the band-like rubber ingredient which is not illustrated is carried out, he makes it open in the closing motion cylinders 21a and 21b through a rod 20, and is trying to make the suction force of the \*\*\*\*(ed) pressure room 17 act on each Naka vacant room 14.

[0021] The suction path 16 formed in the interior of said rotation support shaft 5 along with the longitudinal direction is connected to the suction pipe 4 connected with the suction opening 3 of the blower motor 2 through the rotary seal 22 at the end side of the rotation support shaft 5.

[0022] As shown in drawing 1 and drawing 4 , the rotation drive 23 which carries out the rotation drive of the rotation support shaft 5 and the body 1 of a drum is formed in the other end side of the rotation support shaft 5. Moreover, as this rotation drive 23 It consists of the pulley 24 formed in the other end side of the rotation support shaft 5, a rotation drive motor 25 installed on said track frame 11, a pulley 26 attached in revolving-shaft 25a of this motor 25, and a driving belt 27 \*\*\*\*(ed) by said pulleys 24 and 26.

[0023] This invention is constituted as mentioned above, and in case it prepares a step in the body 1 of a drum and twists the band-like rubber ingredient (carcass ingredient) of different width around it one by one, it makes the suction force of the blower motor 2 act on the pressure room 17 through the suction path 16 of the suction pipe 4 connected with the suction opening 3 of the blower motor 2, and the rotation support shaft 5.

[0024] And in [ of the 1st layer ] making a band-like rubber ingredient with narrow width stick to the center section of the body 1 of a drum In order to make a band-like rubber ingredient adsorb in two or more adsorption holes 15 located in the center of the

body 1 of a drum Make only the closing motion diverter valve 19 of the hollow room 14 divided with the bridgewall 13, and the free passage hole 18 open for free passage open by closing motion cylinder 21b, it is made to act on the hollow room 14 which should make the suction force in the pressure room 17 adsorb a band-like rubber ingredient, and a band-like rubber ingredient is made to stick to the front face of the body 1 of a drum.

[0025] subsequently, in making a band-like rubber ingredient with large width adsorb In order to make a band-like rubber ingredient adsorb in two or more adsorption holes 15 located in the both sides of the longitudinal direction of the body 1 of a drum Make the closing motion diverter valve 19 of the hollow room 14 of the both sides divided with the bridgewall 13, and the free passage hole 18 open for free passage open by closing motion cylinder 21b, the suction force in the pressure room 17 is made to act on the hollow room 14 of both sides, and a wide band-like rubber ingredient is made to stick to the front face of the body 1 of a drum.

[0026] Thus, when carrying out the laminating of the band-like rubber ingredient of two or more sheets with which width differed to the body 1 of a drum one by one and twisting it around it, the suction force of the blower motor 2 can be adsorb certainly in two or more adsorption holes 15 established in the drum front face, and can be make to convey and transfer to degree process by making the hollow room 14 by which partition formation be carried out act on plurality, controlling the closing motion diverter valve 19 through the pressure room 17.

[0027] The condition that drawing 6 attached the imprint drum 1 in which the 2nd operation gestalt of this invention is shown is a sectional view a part. Next, this operation gestalt Between the peripheral face of the rotation support shaft 5 inserted in the core of the imprint drum 1, and wall 1a of the body 1 of a drum While carrying out partition formation of two or more hollow rooms 14 in a hoop direction through the same bridgewall (illustration abbreviation) as the above-mentioned 1st operation gestalt, said hollow room 14 and two or more adsorption holes 15 open for free passage are formed in the front face of the body 1 of a drum.

[0028] Moreover, while forming in the interior of said rotation support shaft 5 the suction path 16 connected through the suction opening 3 and the suction pipe 4 of the blower motor 2 which constitute a suction means, this suction path 16 and said each divided Naka vacant room 14 connect and consist of two or more free passage nozzles 28 equipped with closing motion diverter-valve 19a. In addition, since other configurations are the same as that of the above-mentioned 1st operation gestalt, the same sign is attached and explanation is omitted.

[0029] Thus, with constituting, the adsorption hole 15 of a large number formed in the front face of the body 1 of a drum is carrying out closing motion control of said closing motion diverter-valve 19a, using each or a predetermined field as a group, can be made to be able to respond to the width of a band-like rubber ingredient, can be made to be able to adsorb certainly, and can be twisted.

[0030] In addition, two or more suction nozzles (not shown) are formed in the front face of the body of a drum formed in the bell shape. Moreover, the rotation support shaft equipped with the suction path connected through a suction pipe like the above-mentioned operation gestalt is inserted in the core of the body of a drum. It is also possible to connect said two or more suction nozzles and the suction path of a rotation support shaft in two or more suction pipes, and to prepare and constitute a closing motion diverter valve in the connection of a suction path and each suction pipe.

[0031] Moreover, since other configurations are the same as that of the above-mentioned 1st operation gestalt, the same sign is attached and explanation is omitted.

[0032] Thus, with constituting, it can be made to be able to respond to the width of a band-like rubber ingredient, can be made to be able to adsorb certainly like the above-mentioned operation gestalt, and can twist.

[0033]

[Effect of the Invention] This invention to the core of the body of a drum formed in the bell shape as mentioned above While inserting in the rotation support shaft equipped with the suction path linked to a suction means and carrying out partition formation of two or more hollow rooms through a bridgewall in a hoop direction between the wall of said body of a drum, and the peripheral face of said rotation support shaft Said hollow room and two or more adsorption holes open for free passage are formed in the front face of the body of a drum. On a part of periphery of the rotation support shaft within said body of a drum While forming said suction path and a tubed pressure room open for free passage and forming the free passage hole which is open for free passage with said each divided Naka vacant room on the wall surface of this pressure room The suction force of the band-like rubber ingredient which prepares the closing motion diverter valve which opens and closes this free passage hole and by which the front face of the body of a drum is adsorbed the path linked to the adsorption hole and the suction path of a blower motor which used the suction force by the side of suction of a blower motor, and were established in the front face of the body of a drum -- the suction force of an adsorption hole -- an individual exception -- ON and OFF -- by having prepared the controllable closing motion diverter valve The poor adsorption over cross direction



change of an ingredient and the gas supply pressure failure to a tire shaping drum can be prevented effectively, and there is effectiveness which can raise the dependability of adsorption by the body of a drum.

[Brief Description of the Drawings]

[Drawing 1] a part of condition of having attached the imprint drum in which the 1st operation gestalt of this invention is shown -- it is a sectional view.

[Drawing 2] It is the A-A view side elevation of drawing 1 .

[Drawing 3] It is the B-B view sectional view of drawing 1 .

[Drawing 4] It is the C-C view side elevation of drawing 1 .

[Drawing 5] It is the D-D view side elevation of drawing 2 .

[Drawing 6] a part of condition of having attached the imprint drum in which the 2nd operation gestalt of this invention is shown -- it is a sectional view.

[Description of Notations]

- 1 Body of Drum 1a Wall
- 2 Blower Motor Which Constitutes Suction Means
- 3 Suction Opening 4 Suction Pipe
- 5 Rotation Support Shaft 6 Bearing Material
- 7 Gate Type Frame 8a, 8B Support Shaft
- 9a, 9b Frame
- 10a, 10b Guide rail
- 11 Track Frame
- 12 Holddown Member 13 Bridgewall
- 14 Hollow Room 15 Adsorption Hole
- 16 Suction Path 17 Pressure Room
- 18 Free Passage Hole 19 Closing Motion Diverter Valve
- 20 Rod 21a, 21B Closing Motion Cylinder
- 22 Rotary Seal 23 Rotation Drive
- 24 Pulley 25 Rotation Drive Motor
- 25a Revolving shaft 26 Pulley
- 27 Driving Belt 28 Free Passage Nozzle

(19)日本国特許庁 (J P)

(12) 公 開 特 許 公 報 (A)

(11)特許出願公開番号

特開2001-315219

(P2001-315219A)

(43)公開日 平成13年11月13日(2001. 11. 13)

(51)Int.Cl.<sup>7</sup>

B 2 9 D 30/30

識別記号

F I

B 2 9 D 30/30

テームト\* (参考)

4 F 2 1 2

審査請求 未請求 請求項の数 3 O L (全 6 頁)

(21)出願番号 特願2000-139344(P2000-139344)

(22)出願日 平成12年5月12日(2000. 5. 12)

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Fターム(参考) 4F212 AA45 AC03 AH20 VA12 VD10

VD16 VD20 VK04 VK55 VL11

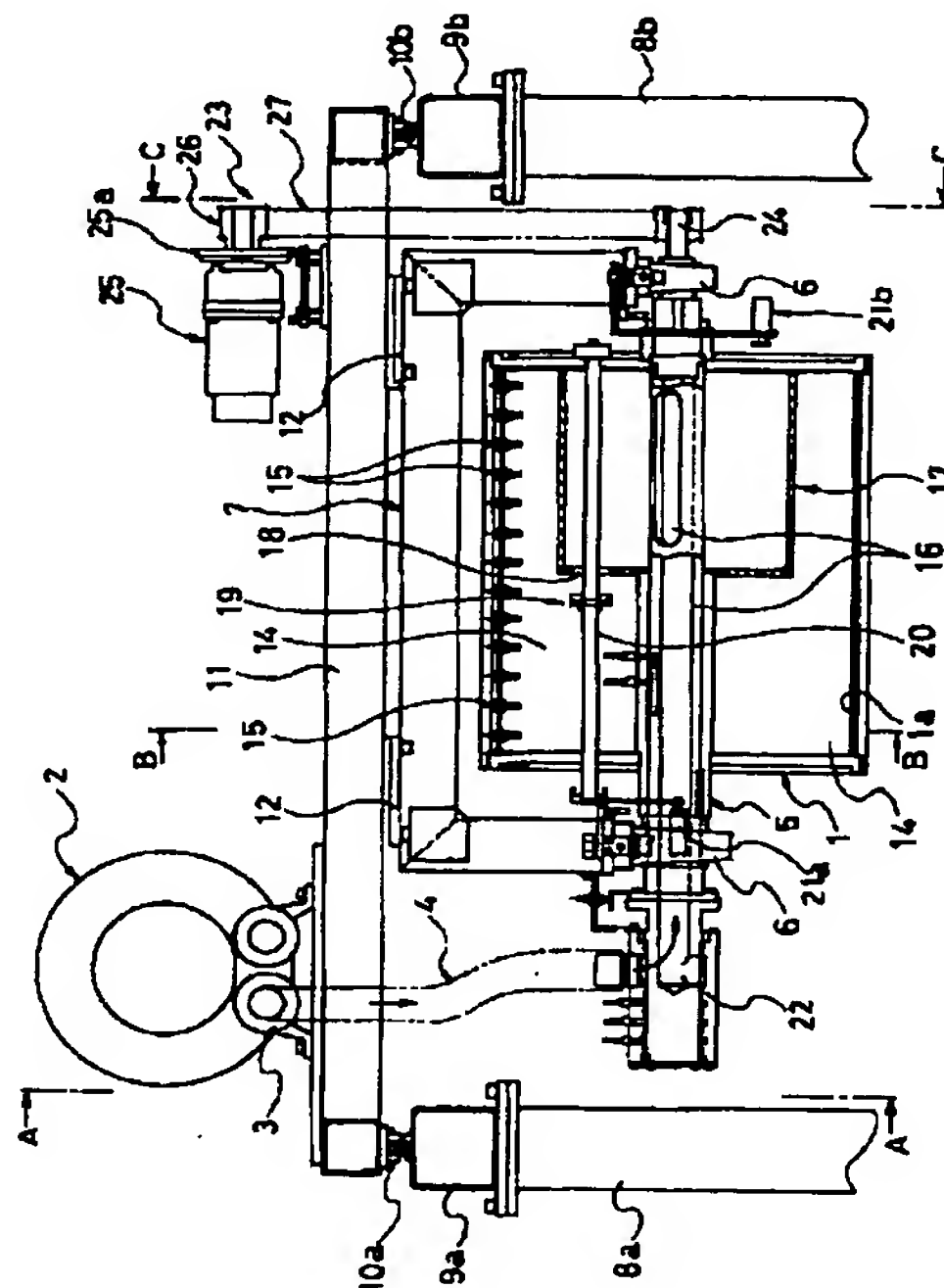
VL13 VP23

(54)【発明の名称】 帯状ゴム材料の転写ドラム

(57)【要約】

【課題】 材料の巾方向変化に対する吸着不良や、タイヤ成形ドラムへの供給不良を有効に防止でき、ドラム本体による吸着の信頼性を高めることが出来る帯状ゴム材料の転写ドラムを提供する。

【解決手段】ドラム本体1内の回転支持軸5の外周の一部には、回転支持軸5の内部に長手方向に沿って形成された吸引通路16と連通する筒状の圧力室17が形成され、この圧力室17の側壁面に、前記区画された各中空室14と連通する複数の連通穴18が形成されている。この複数の連通穴18には、この連通穴18を開閉する開閉切り換え弁19が設けられ、開閉切り換え弁19は、常時は閉弁し、図示しない帯状ゴム材料を吸着保持させる際には、ロッド20を介して開閉シリンダー21bにより開弁させ、蓄圧された圧力室17の吸引力を各中空室14に作用させるようにしている。



## 【特許請求の範囲】

【請求項1】 中空円筒状に形成されたドラム本体の内部に、中心部に挿通された回転支持軸の外周面とドラム本体の内壁との間で、仕切り壁を介して周方向に複数の中空室を区画形成すると共に、ドラム本体の表面に、前記中空室と連通する複数の吸着穴を形成し、前記回転支持軸の内部に吸引手段と接続する吸引通路を形成し、この吸引通路と前記区画された各中空室とを開閉切り換え弁を備えた複数の連通穴で接続して成る帯状ゴム材料の転写ドラム。

【請求項2】 中空円筒状に形成されたドラム本体の中心部に、吸引手段と接続する吸引通路を備えた回転支持軸を挿通し、前記ドラム本体の内壁と前記回転支持軸の外周面との間に仕切り壁を介して周方向に複数の中空室を区画形成すると共に、ドラム本体の表面に前記中空室と連通する複数の吸着穴を形成し、前記ドラム本体内の回転支持軸の外周の一部に、前記吸引通路と連通する筒状の圧力室を形成し、この圧力室の壁面に、前記区画された各中空室と連通する連通穴を形成すると共に、この連通穴を開閉する開閉切り換え弁を設けて成る帯状ゴム材料の転写ドラム。

【請求項3】 表面に複数の吸引ノズルを形成したドラム本体の中心部に、吸引手段と接続する吸引通路を備えた回転支持軸を挿通し、前記複数の吸引ノズルと回転支持軸の吸引通路とを複数の吸引パイプで接続し、吸引通路と各吸引パイプとの接続部に開閉切り換え弁を設けて成る帯状ゴム材料の転写ドラム。

## 【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、帯状ゴム材料の転写ドラムにかかわり、更に詳しくは帯状ゴム材料の巾方向の変化に対する供給不良を改良した転写ドラムに関するものである。

【0002】

【従来の技術】一般にタイヤ成形に於て、ビードの周囲に巻上げ、または巻込まれるカーカス材（帯状ゴム材料）が複数層である場合、成形されたタイヤの故障や、耐久性の見地から、各層の両端部で段差が生じるように異巾の材料を使用している。

【0003】従って、タイヤ成形ドラム上でタイヤ構成材料としてのカーカス材を複数枚重ねて貼付ける際には、それぞれ所定幅に帯状材料が巻取られた個別のストックロールを成形機のサービサーに供給して巻出し使用していた。

【0004】このため、原反ロールから巻出した帯状ゴム材料を切断する工程では、別々に次工程へ送る材料を準備する必要があり、また成形工程においても、それぞれの材料に応じたサービサーを備える必要があり、設備費がかかるとともに、所要スペースを増大させる必要があり、帯状材料の供給と、巻付け作業に手間と時間がか

かって作業能率が極めて悪いと言う問題があった。

【0005】そこで従来では、原反ロールから同一幅の帯状ゴム材料を巻出し、成形ドラム幅に切断した後、その切断材料を直交する向きに配設した搬送コンベヤに移載させて成形ドラム側に搬送して供給する装置が提案されていた。

【0006】然しながら、定尺切断した帯状ゴム材料を直交する向きに方向を変え、搬送コンベヤに移載させて供給する方向は、貼付け精度等に問題があり、また作業能率も悪いと言う問題があった。

【0007】そこで、更に定尺切断された複数枚の帯状ゴム材料（ゴムシート、カーカス材料等）をドラム本体の外周面に順次ステップを設けた状態で積層させて巻付け、ドラム本体を成形ドラム側に移動させて帯状ゴム材料の積層体を成形ドラムに巻き移す転写ドラムが使用されていた。

【0008】

【発明が解決しようとする課題】然しながら、ドラム本体では、上述したように異巾のカーカス材料をバキューム等の吸着力でドラム表面に吸着させる方式であったため、カーカス材料の巾変化に対して信頼性に問題があった。

【0009】即ち、異巾のカーカス材料を吸着させるドラム表面に設けた複数の吸着穴は、異巾の帯状ゴム材料の全体巾に対して吸着できるように形成されているため、例えば、1層目の帯状ゴム材料をドラム表面に設けた複数の吸着穴で吸着させ、次いで2層目の帯状ゴム材料、3層目の帯状ゴム材料と巾の異なった材料を吸着しながら巻付ける場合に、1層目の巾の狭い帯状ゴム材料を吸着穴で吸着させる場合に、吸着しない吸着穴は大気を吸い込むことになる。

【0010】この結果、大気を吸い込んだバキュームの吸着力は急激に低下し、2層目及び3層目の材料吸着力が低下してドラム本体への巻付け時に剥離し、その結果、タイヤ成形ドラムへの供給不良等の問題が生じ、材料の巾変化に対する吸着の信頼性が低下すると言う問題があった。

【0011】この発明の目的は、異巾の帯状ゴム材料をドラム本体に順次積層させて巻付ける場合に、材料の巾方向変化に対する吸着不良や、タイヤ成形ドラムへの供給不良を有効に防止でき、ドラム本体による吸着の信頼性を高めることが出来る帯状ゴム材料の転写ドラムを提供することにある。

【0012】

【課題を解決するための手段】この発明は上記目的を達成するため、中空円筒状に形成されたドラム本体の内部に、中心部に挿通された回転支持軸の外周面とドラム本体の内壁との間で、仕切り壁を介して周方向に複数の中空室を区画形成すると共に、ドラム本体の表面に、前記中空室と連通する複数の吸着穴を形成し、前記回転支持



軸の内部に吸引手段と接続する吸引通路を形成し、この吸引通路と前記各区画された中空室とを開閉切り換え弁を備えた複数の連通穴で接続したことを要旨とするものである。

【0013】また、この発明は、中空円筒状に形成されたドラム本体の中心部に、吸引手段と接続する吸引通路を備えた回転支持軸を挿通し、前記ドラム本体の内壁と前記回転支持軸の外周面との間に仕切り壁を介して周方向に複数の中空室を区画形成すると共に、ドラム本体の表面に前記中空室と連通する複数の吸着穴を形成し、前記ドラム本体内の回転支持軸の外周の一部に、前記吸引通路と連通する筒状の圧力室を形成し、この圧力室の壁面に、前記区画された各中空室と連通する連通穴を形成すると共に、この連通穴を開閉する開閉切り換え弁を設けたことを要旨とするものである。

【0014】更に、この発明は、表面に複数の吸引ノズルを形成したドラム本体の中心部に、吸引手段と接続する吸引通路を備えた回転支持軸を挿通し、前記複数の吸引ノズルと回転支持軸の吸引通路とを複数の吸引パイプで接続し、吸引通路と各吸引パイプとの接続部に開閉切り換え弁を設けたことを要旨とするものである。

【0015】この発明は、上記のように構成され、ドラム本体の表面に吸着される帯状ゴム材料の吸引力を、ブロアーモータの吸引側の吸引力を使用し、またドラム本体の表面に設けた吸着穴とブロアーモータの吸引通路に接続する通路に、吸着穴の吸引力を個別にON、OFF制御可能な開閉切り換え弁を設けたことにより、材料の巾方向変化に対する吸着不良や、タイヤ成形ドラムへの供給不良を有効に防止でき、ドラム本体による吸着の信頼性を高めることが出来るものである。

【0016】

【発明の実施の形態】以下、添付図面に基づき、この発明の実施形態を説明する。

【0017】図1は、この発明の第1実施形態を示す転写ドラムを取付けた状態の一部断面図、図2は図1のA-A矢視側面図、図3は図1のB-B矢視断面図、図4は、図1のC-C矢視側面図を示し、前記転写ドラムの中空円筒状に形成されたドラム本体1の中心部には、後述する吸引手段を構成するブロアーモータ2の吸引口3に吸引パイプ4を介して接続する回転支持軸5が挿通されている。

【0018】前記回転支持軸5は、軸受け部材6を介して門型フレーム7に回転可能に支持され、また門型フレーム7は、支持軸8a、8b上のフレーム9a、9bに敷設されたガイドレール10a、10bに沿って移動可能な走行フレーム11に固定部材12を介して吊設されている。

【0019】前記ドラム本体1の内壁1aと前記回転支持軸5の外周面との間には、図3に示すように、複数枚の仕切り壁13を介して周方向に複数の中空室14が区

画形成され、またドラム本体1の表面には、前記各中空室14と連通する複数の吸着穴15が形成されている。

【0020】前記ドラム本体1内の回転支持軸5の外周の一部には、回転支持軸5の内部に長手方向に沿って形成された吸引通路16と連通する筒状の圧力室17が形成され、この圧力室17の側壁面に、前記区画された各中空室14と連通する複数の連通穴18が形成されている。この複数の連通穴18には、この連通穴18を開閉する開閉切り換え弁19が設けられ、開閉切り換え弁19は、常時は閉弁し、図示しない帯状ゴム材料を吸着保持させる際には、ロッド20を介して開閉シリンダー21a、21bにより開弁させ、蓄圧された圧力室17の吸引力を各中空室14に作用させるようにしている。

【0021】前記回転支持軸5の内部に長手方向に沿って形成された吸引通路16は、回転支持軸5の一端側において、ロータリーシール22を介してブロアーモータ2の吸引口3に連結された吸引パイプ4に接続されている。

【0022】また、回転支持軸5の他端側には、図1及び図4に示すように、回転支持軸5及びドラム本体1を回転駆動させる回転駆動機構23が設けられ、この回転駆動機構23としては、回転支持軸5の他端側に設けられたプーリ24と、前記走行フレーム11上に設置された回転駆動モータ25と、このモータ25の回転軸25aに取付けられたプーリ26と、前記プーリ24及び26に掛回された駆動ベルト27とで構成される。

【0023】この発明は、上記のように構成され、異巾の帯状ゴム材料（カーカス材料）をドラム本体1に順次ステップを設けて巻付ける際、ブロアーモータ2の吸引口3に連結された吸引パイプ4、回転支持軸5の吸引通路16を通してブロアーモータ2の吸引力を圧力室17に作用させておく。

【0024】そして、例えば、第1層目の巾の狭い帯状ゴム材料をドラム本体1の中央部に吸着させる場合には、ドラム本体1の中央に位置する複数の吸着穴15で帯状ゴム材料を吸着させるために、仕切り壁13で区画された中空室14と連通する連通穴18の開閉切り換え弁19のみを開閉シリンダー21bで開弁させ、圧力室17内の吸引力を帯状ゴム材料を吸着させるべき中空室14に作用させて帯状ゴム材料をドラム本体1の表面に吸着させる。

【0025】次いで、巾の広い帯状ゴム材料を吸着させる場合には、ドラム本体1の長手方向の両側に位置する複数の吸着穴15で帯状ゴム材料を吸着させるために、仕切り壁13で区画された両側の中空室14と連通する連通穴18の開閉切り換え弁19を開閉シリンダー21bで開弁させ、圧力室17内の吸引力を両側の中空室14に作用させて巾広の帯状ゴム材料をドラム本体1の表面に吸着させる。

【0026】このようにして、巾の異なった複数枚の帯



状ゴム材料をドラム本体1に順次積層させて巻付ける場合には、ブロアーモータ2の吸引力を圧力室17を介して開閉切り換え弁19を制御しながら複数に区画形成された中空室14に作用させることで、ドラム表面に設けた複数の吸着穴15で確実に吸着し、次工程へ搬送し移載させることが出来るものである。

【0027】次に、図6はこの発明の第2実施形態を示す転写ドラム1を取付けた状態の一部断面図であって、この実施形態は、転写ドラム1の中心部に挿通された回転支持軸5の外周面とドラム本体1の内壁1aとの間で、上記第1実施形態と同様な仕切り壁（図示省略）を介して周方向に複数の中空室14を区画形成すると共に、ドラム本体1の表面に、前記中空室14と連通する複数の吸着穴15を形成する。

【0028】また、前記回転支持軸5の内部に吸引手段を構成するブロアーモータ2の吸引口3と吸引パイプ4を介して接続する吸引通路16を形成すると共に、この吸引通路16と前記区画された各中空室14とを開閉切り換え弁19aを備えた複数の連通ノズル28とで接続して構成するものである。なお、その他の構成は上記第1実施形態と同様なので同一符号を付して説明は省略する。

【0029】このように構成することで、ドラム本体1の表面に形成された多数の吸着穴15は、前記開閉切り換え弁19aを個々に、または所定領域を群として開閉制御することで、帯状ゴム材料の巾に対応させて確実に吸着させ、巻付けることが出来るものである。

【0030】なお、中空円筒状に形成されたドラム本体の表面に複数の吸引ノズル（図示せず）を形成し、またドラム本体の中心部に、上記実施形態と同様に吸引パイプを介して接続する吸引通路を備えた回転支持軸を挿通し、前記複数の吸引ノズルと回転支持軸の吸引通路とを複数の吸引パイプで接続し、吸引通路と各吸引パイプとの接続部に開閉切り換え弁を設けて構成することも可能である。

【0031】また、他の構成は上記第1実施形態と同様なので同一符号を付して説明は省略する。

【0032】このように構成することで、上記実施形態と同様に、帯状ゴム材料の巾に対応させて確実に吸着させ、巻付けることが出来るものである。

【0033】

【発明の効果】この発明は、上記のように中空円筒状に形成されたドラム本体の中心部に、吸引手段と接続する吸引通路を備えた回転支持軸を挿通し、前記ドラム本体

の内壁と前記回転支持軸の外周面との間に仕切り壁を介して周方向に複数の中空室を区画形成すると共に、ドラム本体の表面に前記中空室と連通する複数の吸着穴を形成し、前記ドラム本体内の回転支持軸の外周の一部に、前記吸引通路と連通する筒状の圧力室を形成し、この圧力室の壁面に、前記区画された各中空室と連通する連通穴を形成すると共に、この連通穴を開閉する開閉切り換え弁を設け、ドラム本体の表面に吸着される帯状ゴム材料の吸引力を、ブロアーモータの吸引側の吸引力を使用し、またドラム本体の表面に設けた吸着穴とブロアーモータの吸引通路に接続する通路に、吸着穴の吸引力を個別にON、OFF制御可能な開閉切り換え弁を設けたことにより、材料の巾方向変化に対する吸着不良や、タイヤ成形ドラムへの供給不良を有効に防止でき、ドラム本体による吸着の信頼性を高めることが出来る効果がある。

【図面の簡単な説明】

【図1】この発明の第1実施形態を示す転写ドラムを取付けた状態の一部断面図である。

【図2】図1のA-A矢視側面図である。

【図3】図1のB-B矢視断面図である。

【図4】図1のC-C矢視側面図である。

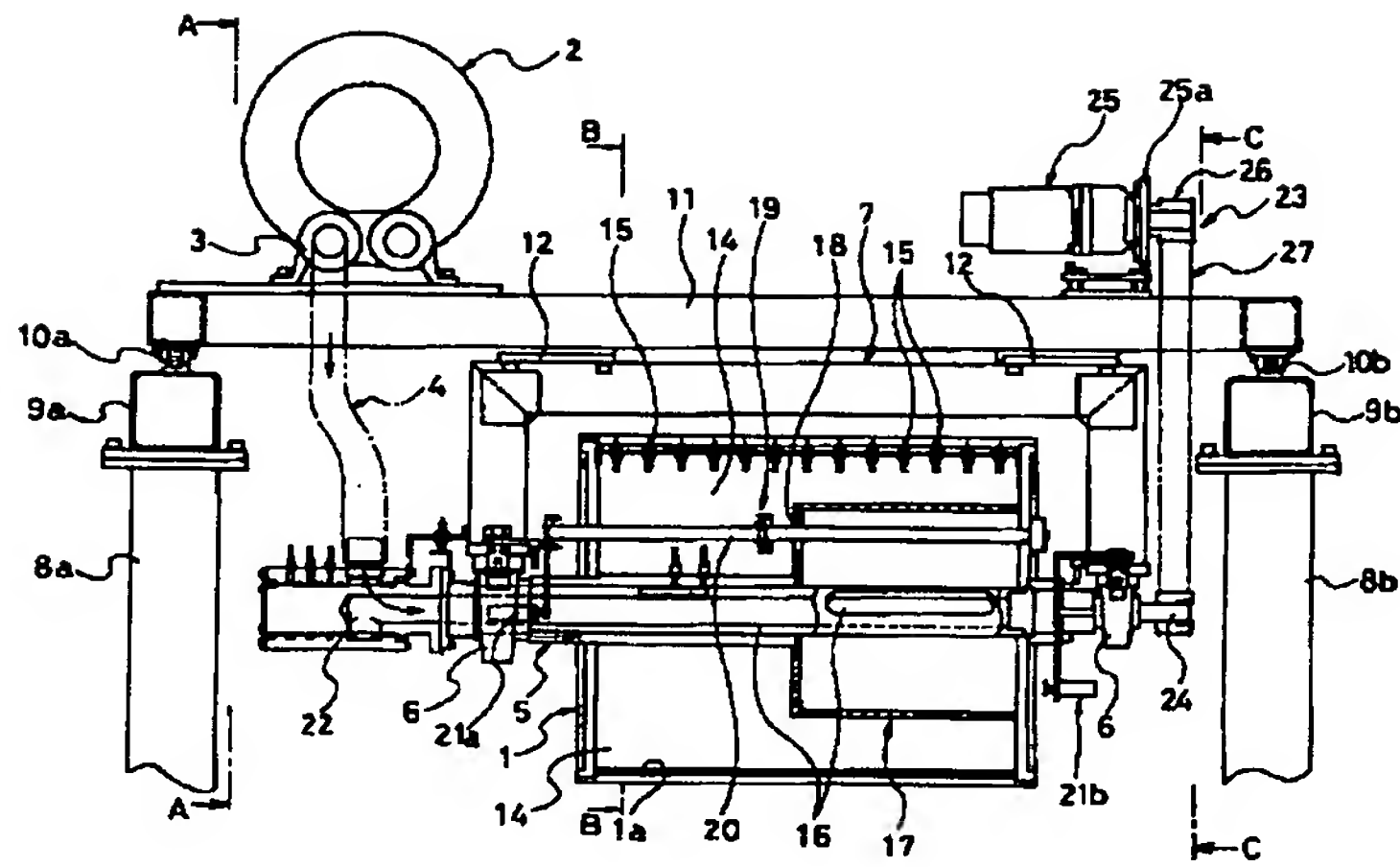
【図5】図2のD-D矢視側面図である。

【図6】この発明の第2実施形態を示す転写ドラムを取付けた状態の一部断面図である。

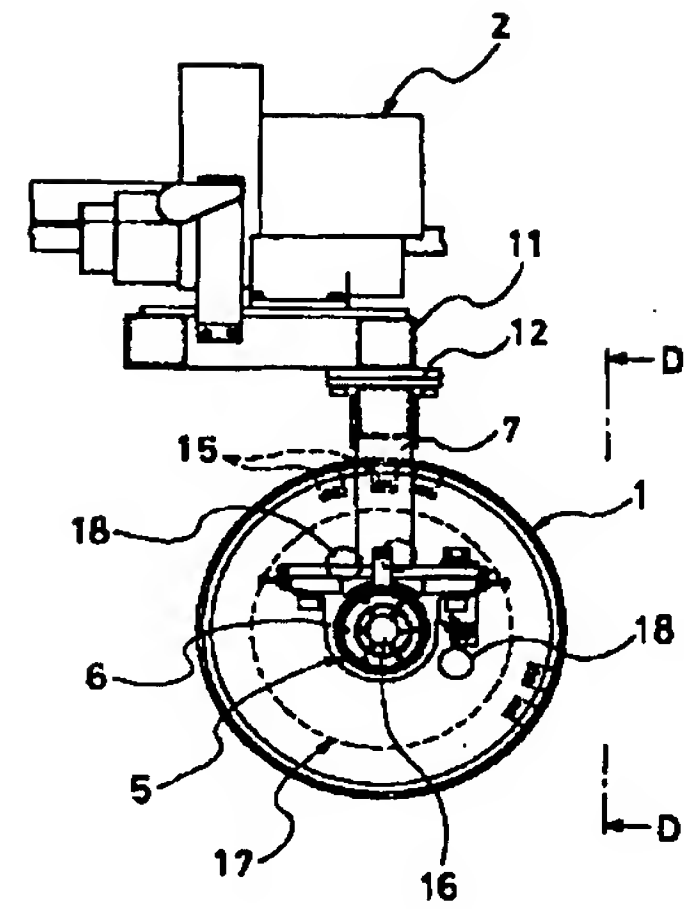
【符号の説明】

1	ドラム本体	1a	内壁
2	吸引手段を構成するブロアーモータ		
3	吸引口	4	吸引パイプ
5	回転支持軸	6	軸受け部材
7	門型フレーム	8a, 8b	支持軸
9a, 9b	フレーム		
10a, 10b	ガイドレール		
11	走行フレーム		
12	固定部材	13	仕切り壁
14	中空室	15	吸着穴
16	吸引通路	17	圧力室
18	連通穴	19	開閉切り換え弁
20	ロッド	21a, 21b	開閉シ
40	リンダー		
22	ロータリーシール	23	回転駆動機構
24	ブーリ	25	回転駆動モータ
25a	回転軸	26	ブーリ
27	駆動ベルト	28	連通ノズル

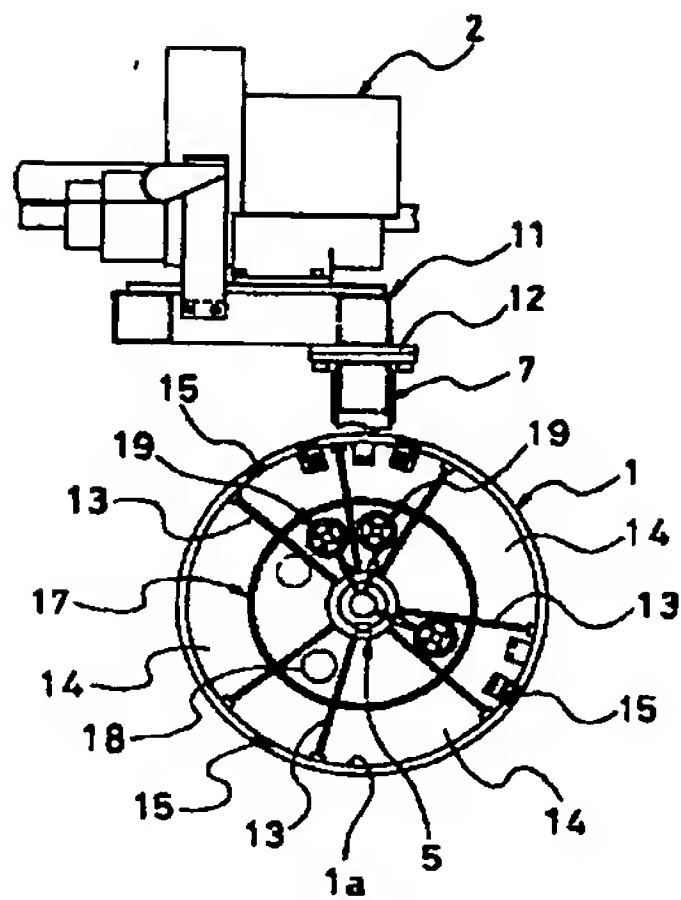
【図1】



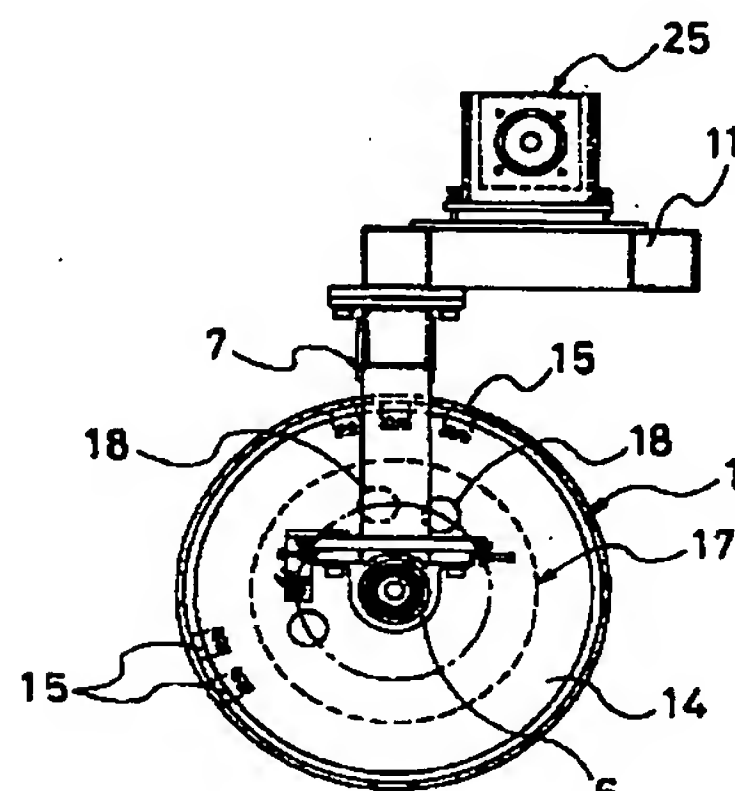
【図2】



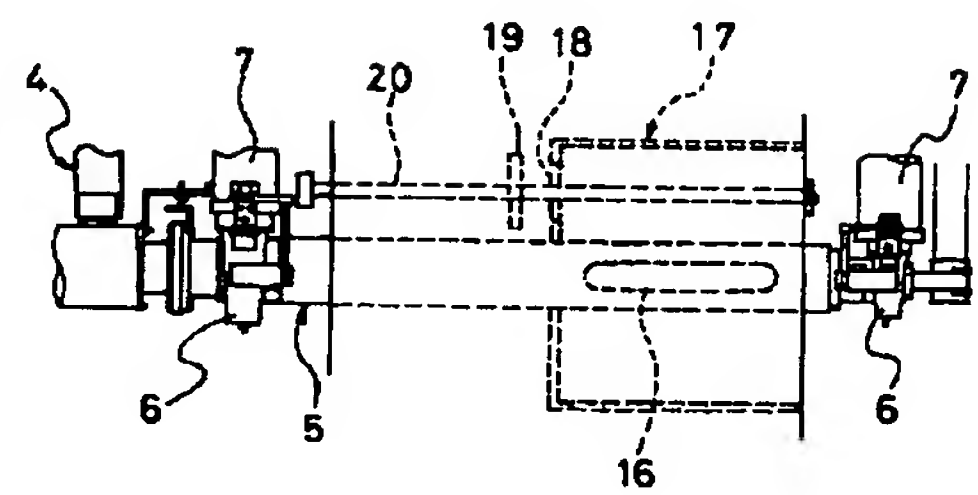
【図3】



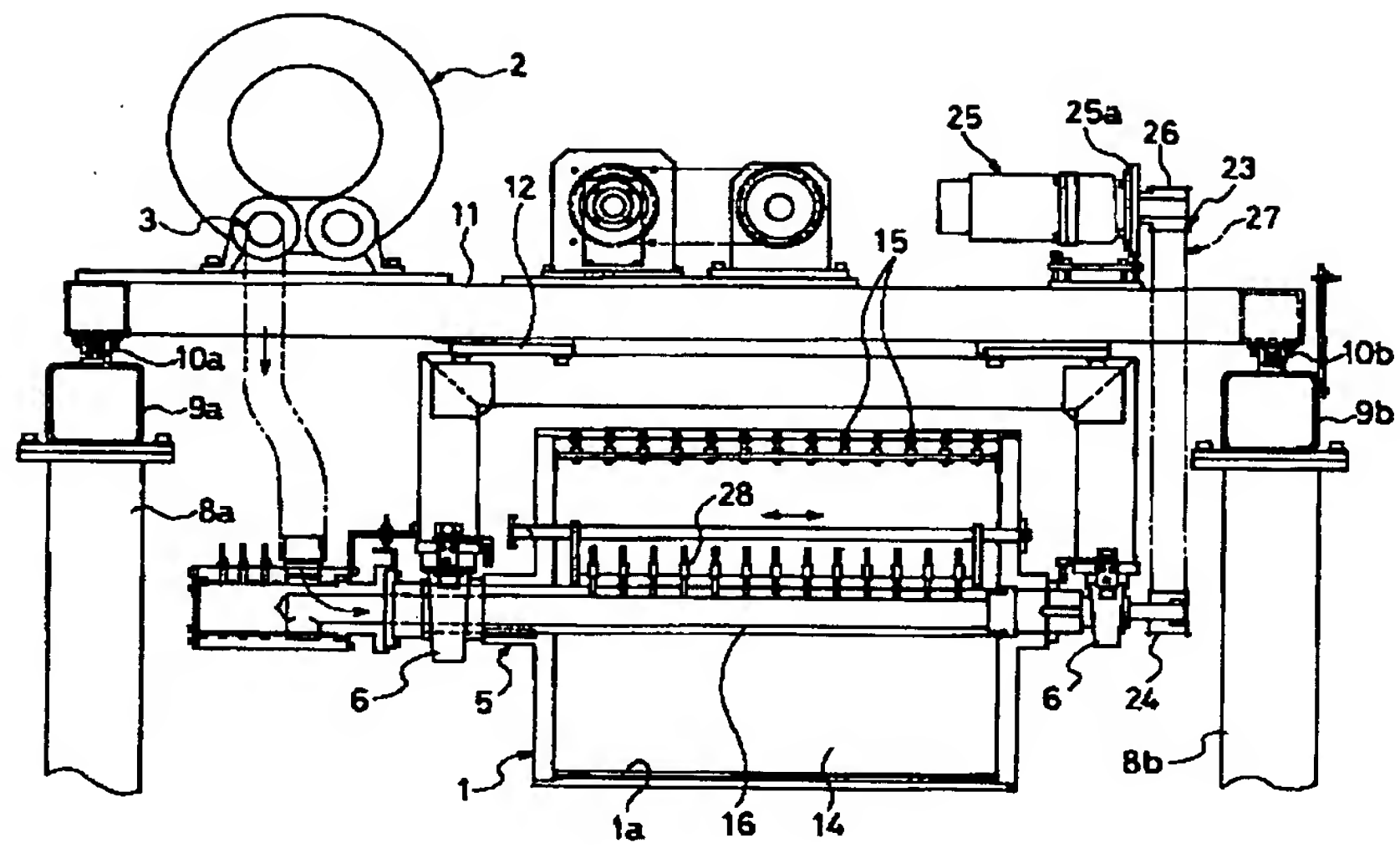
【図4】



【図5】



【図6】



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